

AUG - 9 2007

DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE A Q PROGRAM

August 3, 2007
Transmittal Letter

Mr. Kevin Schilling
Idaho Department of Environmental Quality
Air Quality Division
1410 N. Hilton
Boise, Idaho 83706

**Subject: Air Quality Impact Assessment Report For Planned Gyp Stack
Agrium Conda Phosphate Operations Facility
Soda Springs, Idaho**

Dear Mr. Schilling:

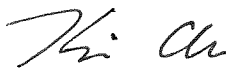
Kleinfelder is pleased to present this Air Quality Impact Assessment (AQIA) report for the Agrium Conda Phosphate Operations (Agrium) facility. This assessment was conducted consistent with the source parameters and estimated Potential To Emit (PTE) presented in the Permit To Construct (PTC) Application that accompanies this report. It follows the approach presented in the Ambient Air Quality Modeling Protocol dated June 4, 2007, with the exception of the emission rates that were presented in the protocol and the representation of the gyp stacks. Since submittal of the protocol, it was recognized that an incorrect factor was applied to the PTE estimates. In addition, the planned gyp stack presented in the protocol was misrepresented and it was confirmed that there are two existing gyp stacks rather than one. Therefore, the sources and emissions presented in this AQIA have been corrected and are consistent with the accompanying PTC application. Finally, although PSD requirements had been discussed in the protocol based on preliminary emission estimates, the final PTE for the project does not trigger PSD and therefore PSD level analysis was not conducted.

Please feel free to contact us if you have any questions or require additional information for approval of this AQIA.

Respectfully submitted,

KLEINFELDER WEST, INC.


Estee Lafrenz, P.E.
Air Quality Engineer


Kris Allen, E.I.T.
Project Manager

Enclosure:
AQIA Report

**AIR QUALITY IMPACT ASSESSMENT
REPORT FOR
PROPOSED NEW GYP STACKS
NU-WEST INDUSTRIES, INC.,
AGRIUM CONDA PHOSPHATE OPERATIONS
SODA SPRINGS, IDAHO**

August 3, 2007

Kleinfelder Project Number: 86045

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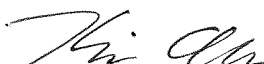
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Prepared For:

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AGRIUM CONDA PHOSPHATE OPERATIONS
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Soda Springs, Idaho 83276**

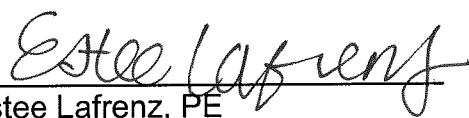
Kleinfelder Project No. 86045

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List of Acronyms

AAC	Acceptable Ambient Concentration
APS	Ammonium Phosphate Sulfate
AQIA	Ambient Air Quality Assessment
AQRV	Air Quality Related Values
EL	Emission Level
FIA	Full Impact Assessment
IDAPA	Idaho Administrative Procedure Act
IDEQ	Idaho Department of Environmental Quality
MAP	Monoammonium Phosphate
MGA	Merchant Grade phosphoric Acid
NAAQS	National Ambient Air Quality Standards
PTC	Permit To Construct
PTE	Potential To Emit
SCL	Significant Contribution Levels
SPA	Super Phosphoric Acid
TAP	Toxic Air Pollutant

1.0 EXECUTIVE SUMMARY

The Nu-West Industries, Agrium Conda Phosphate Operations ("Agrium") facility, provides this air quality impact assessment (AQIA) in support of a permit to construct ("PTC") to allow for the addition of a proposed new 125 acre gypsum stack. The facility currently operates under a Tier I permit number T1-040308 and submitted a renewal application in April, 2006.

The proposed gypsum stack will result in potential emissions of fluoride and particulate matter. Fluoride, listed as a non-carcinogenic toxic air pollutant ("TAP") in IDAPA 58.01.01.585, has potential emissions that will exceed the listed TAP screening emission level ("EL") of 0.167 pounds per hour. In addition, emissions of particulate matter, regulated as PM-10 (less than 10 microns in diameter) and PM-2.5 (less than 2.5 microns in diameter) will exceed the modeling threshold for a facility-wide net emissions increase of 1 ton per year. Therefore, in order to issue the PTC for the proposed new gypsum stack, this ambient air quality impact analysis ("AQIA") was required to address the potential impacts of these regulated compounds.

This AQIA has been conducted consistent with the information submitted in the PTC, the Idaho Administrative Procedures Act (IDAPA) 58.01.01, the Idaho Department of Environmental Quality (IDEQ) Dispersion Modeling Guidelines ("Guidelines"), revised December 31, 2002, the *Ambient Air Quality Modeling Protocol for Nu-West Industries, Inc.* dated June 4, 2007, and the associated dispersion modeling checklist. The AQIA addresses the approach used for assessing the ambient air impacts from the proposed source emissions for comparison with the Acceptable Ambient Concentration (AAC) for fluoride and the Significant Contribution Levels (SCL) and National Ambient Air Quality Standards (NAAQS) for PM10/PM2.5. Because the PM10/PM2.5 emissions are below significant emission rates, a PSD level analysis was not required nor conducted to address Air Quality Related Values (AQRV's), such as visibility, soils and vegetation impacts, acid deposition, etc., for Class I or "sensitive" Class II areas.

Based on the analysis performed, the resulting impacts of fluoride are less than the AAC and the PM-10/PM-2.5 impacts are less than the applicable SCLs. Table EX-1 summarizes the results.

Summary Table EX-1

Air Quality Impact Assessment Results Compared with Applicable Standards

Pollutant	Averaging Period	Modeled Impacts ^{1,2} ($\mu\text{g}/\text{m}^3$)	SCL or AAC ($\mu\text{g}/\text{m}^3$)	Requires Additional Analysis (Yes/No)
Fluoride	24-hour	4.19563	125	No
Particulate Matter (PM-10)	24-hour	1.32720	5.0	No
	Annual ³	0.20912	NA	No
Particulate Matter (PM-2.5)	24-hour	0.39658	5.0	No
	Annual	0.06794	1.0	No

Notes:

¹ Modeled impact of fluoride is based on facility wide emissions since this is a TAP in excess of the screening emission level and no SCL equivalent is published for which the new source only impacts can be compared.

² Modeled impacts of PM10 and PM2.5 are based on the new source only for comparison to the SCL. Because impacts did not exceed the SCL, no further analysis is required.

³ The Annual PM-10 standard was revoked by the USEPA on November 28, 2006.

If there are any questions or items of discussion, the following points of contact are available:

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2.0 BACKGROUND AND PURPOSE

The Nu-West Industries, Agrium Conda Phosphate Operations ("Agrium") facility, is providing this air quality impact assessment (AQIA) in support of a permit to construct ("PTC") for a proposed new source of potential emissions not currently covered by existing permits. The facility currently operates under a Tier I permit number T1-040308 and submitted a renewal application in April, 2006.

The Agrium facility is located approximately 7 miles Northeast of Soda Springs Idaho within an attainment area and is a major source as defined by IDAPA 58.01.01.008.10. A Project Location Map, Vicinity Map and Facility Layout Map are provided as Figures A-1 through A-3, respectively in Appendix A.

The facility production process results in the generation of a phosphogypsum slurry by-product that is stored in large piles called "gyp stacks". Two existing gyp stacks cover approximately 125 acres each with a height of approximately 175 feet. An additional 125 acre area has been designated for a new proposed gyp stack to be used for future storage capacity of the phosphogypsum by-product. The proposed gyp stack will result in potential emissions of fluoride and particulate matter.

Fluoride, listed as a non-carcinogenic toxic air pollutant ("TAP") in IDAPA 58.01.01.585, has potential emissions that will exceed the listed TAP screening emission level ("EL") of 0.167 pounds per hour. In addition, emissions of particulate matter, regulated as PM-10 (less than 10 microns in diameter) and PM-2.5 (less than 2.5 microns in diameter) will exceed the modeling threshold for a facility-wide net emissions increase of 1 ton per year. Therefore, in order to issue the PTC for the proposed new gypsum stack, this AQIA was completed to demonstrate that the ambient air quality impacts from the proposed new source emissions will not cause or contribute to an exceedance of a standard for regulated criteria air pollutants; or injure or unreasonably affect human or animal life or vegetation based on acceptable ambient concentrations ("AAC") for regulated Toxic Air Pollutants ("TAP").

3.0 MODEL DESCRIPTION AND JUSTIFICATION

To properly demonstrate compliance with the ambient air quality standards, the American Meteorological Society (AMS)/ Environmental Protection Agency (EPA) Regulatory Model (AERMOD) was chosen to assess the potential air quality impacts from the project. This model was chosen over SCREEN3 since the facility consists of a complex array of buildings and emission sources (i.e., can not be merged per the EPA Guidelines on Air Quality Modeling) and is surrounded by complex terrain. Additionally, it was chosen over the Industrial Source Complex (ISC3) model, since AERMOD has replaced ISC3 on December 9, 2006 as the preferred model for complex industrial sources. It is considered the best state-of-the-practice Gaussian plume dispersion model that provides better characterization of plume dispersion than does ISC3. The current EPA approved model version 07026 will be implemented using the BREEZE software.

4.0 EMISSIONS AND SOURCE DATA

4.1 Description of Operations

The Agrium facility operates under SIC code 2874 and produces phosphate-based fertilizers, including granular fertilizers monoammonium phosphate (MAP) and ammonium phosphate sulfate (APS). The facility also produces a liquid fertilizer called superphosphoric acid (SPA) and merchant grade phosphoric acid (MGA). Sulfuric acid is used in the production of fertilizer and is either manufactured at the Agrium facility or purchased from other sources.

The facility production process results in the generation of a phosphogypsum slurry by-product that is stored in large piles called "gyp stacks". Two existing gyp stacks cover approximately 125 acres each with a height of approximately 175 feet. An additional 125 acre area has been designated for a new proposed gyp stack to be used for future storage capacity of the phosphogypsum by-product. The proposed gyp stack will result in potential emissions of fluoride and particulate matter. Table 4-1 summarizes the potential facility emissions increases with the proposed 125 acre gyp stack.

Table 4-1
Facility Potential to Emit for Regulated Pollutants

Pollutant	Current Emissions (TPY)	Increase in Emissions from planned 125 Acre Gyp Stack (lb/hr)	Increase in Emissions from planned 125 Acre Gyp Stack (TPY)	Total Facility Wide Potential To Emit (TPY)
PM ₁₀	79.47	0.43	1.88	81.35
PM _{2.5}	11.43	0.05	0.29	11.71
Fluoride	16.06	0.42	1.83	17.89

As shown in Table 4-1, Fluoride, listed as a non-carcinogenic toxic air pollutant ("TAP") in IDAPA 58.01.01.585, has potential emissions that will exceed the listed TAP screening emission level ("EL") of 0.167 pounds per hour. In addition, emissions of particulate matter, regulated as PM-10 (less than 10 microns in diameter) and PM-2.5

(less than 2.5 microns in diameter) will exceed the modeling threshold for a facility-wide net emissions increase of 1 ton per year. Therefore, these compounds were modeled to assess the ambient impacts.

4.2 Pollutant Sources and Modeled Emission Rates

The planned 125 acre gyp stack is treated as an area source for modeling the emission impacts. For purposes of the PA, this source was modeled alone for comparison with the SCLs.

Since there is not a significant contribution level or equivalent threshold for assessing individual sources of TAP emissions for their individual significance, the facility wide potential emissions of fluoride were assessed for comparison with the acceptable ambient concentrations for non-carcinogens ("AAC").

4.3 Justification for Sources Determined to be "Inconsequential"

No sources were identified to be inconsequential for this assessment.

4.4 Source Parameters

The sources assessed for the PA of particulate matter emissions is limited to the planned gyp stack alone. Tables C-1 and C-2, in Appendix C, provide the model input parameters used. The sources assessed for the FIA of fluoride include point, area and volume sources. The model input parameters for each of these are provided in Tables C-3 through C-8, in Appendix C.

4.5 Facility Plan

A vicinity location map showing the property boundary and control boundary is provided as Figure A-2 in Appendix A. A facility layout showing the sources and structure locations is provided as Figure A-3 in Appendix A.

4.6 Facility Location

The facility is located in eastern Idaho about 7 miles (11 km) north of the city of Soda Springs, Idaho. The approximate center point of the property is located at UTM 455,684 N by 4,731,803 E, Zone 12 (NAD83). The facility and surrounding area is a sparsely populated, rural area with terrain ranging from about 6,000 to 7,000 feet above mean sea level (MSL) within 1 mile (1.6 km) of the facility. The project area has been designated attainment for all criteria pollutants by the IDEQ and the U.S. Environmental Protection Agency ("USEPA"). Figure A-1, in Appendix A, provides a project location map.

5.0 RECEPTOR NETWORK

The facility is located in a remote area with access limited by fencing and controlled access roads. The facility property boundary extends beyond the controlled access area. Since this controlled area does not cover the entire property, ambient air potentially accessible by the public is considered anywhere outside the controlled area, including the facility's property not within the control boundary. Therefore, the receptor placement is limited to a control boundary rather than the property boundary. The property and controlled boundaries are shown on Figure A-2, Vicinity Map, in Appendix A.

Receptor locations were developed following the IDEQ Air Quality Modeling Guidelines and based on the anticipated location of maximum impacts due to the sources, facility layout and surrounding terrain. The receptors include fence line receptors and nested grids consisting of fine, medium and coarse receptor distances. Elevations were associated with these receptors by applying the USGS Digital Elevation Model (DEM) data. Figure A-4, in Appendix A, depicts the receptor grids and a description of the grids is as follows.

5.1 Fenceline Receptors

Fenceline receptors were placed along the control boundary every 50 meters in linear distance.

5.2 Fine Grid

A fine grid of receptors was placed at 100-meter spacing, from the facility control boundary outward to approximately 1 km in all directions.

5.3 Medium Grid

A medium grid was placed at 250-meter spacing, from the fine grid outward to approximately 2.5 km in each direction from the control boundary.

5.4 Coarse Grid

A coarse grid was placed at 500-meter spacing, from the medium grid outward to 5 km in each direction from the facility control boundary.

5.5 Very Course Grid

A very course grid was placed at 1,000-meter spacing, from the course grid to approximately 10 km in each direction from the facility control boundary.

5.6 Hot Spot Grids

The analysis did not indicate a need for Hot Spot Grids as the ambient concentrations are shown to decrease in distance from the control boundary.

6.0 ELEVATION DATA

Due to the complex terrain surrounding the facility, elevations were included for all the receptor points. Terrain elevations for the model receptors were obtained from the U.S. Geological Survey (USGS) using 7.5-minute Digital Elevation Model (DEM) data files. DEM files consist of a sampled array of elevations for a number of ground positions at regularly spaced intervals. Each 7.5-minute DEM is based on 10 meter data spacing within the UTM projection. The AERMAP processor was used to assign elevations to each receptor.

Based on the proposed receptor grid modeling domain, a combination of the Alexander, China Hat, Johnson Creek, Lower Valley, Soda Springs, and The Dip DEM quadrants were used.

Terrain elevation for the sources and structures within the facility boundary were based on a digitally prepared three-dimensional CAD file prepared by 3-DiWest to reflect accurate elevations. This includes terrain that has been modified due to the accumulation of gypsum stacks located along the western portion of the facility.

7.0 METEOROLOGICAL DATA

In accordance with Section 5.8 of the IDEQ Air Quality Modeling Guideline, and Section 9.3 of the EPA Guideline on Air Quality Models (40 CFR part 51, Appendix W), one year of "on-site" meteorological data was utilized for the assessment. Based on a memorandum from the USEPA, data acquired near a facility that is representative for the area is considered as "on-site" data and are considered adequate for modeling ambient impacts. The data were acquired from the Monsanto facility meteorological station located approximately 4 miles southwest of the Agrium facility for calendar year 2003. Figure A-5 in Appendix A shows the location of the surface meteorological tower relative the facility.

These data were previously processed and utilized for a voluntary AQIA submitted with the Tier I renewal on behalf of Agrium and were the most complete and current data available at the time. The data were processed with the corresponding year from a representative NWS meteorological station (Pocatello, Idaho) and upper air data from Salt Lake City Airport. The 2003 hourly surface observations (on-site and Pocatello NWS) and the upper air sounding data (Salt Lake City) were quality checked and processed with the AERMET meteorological data processor (USEPA Version 06341) to create the surface and profile data files required for the AERMOD program. Missing data were filled in accordance with the guideline procedures for filling missing data (the on-site data file was greater than 99% complete prior to filling missing data). The surface data were processed using seasonal land use surface characteristics consistent with the location of the meteorological station (based on cultivated lands) as shown in Table 7-1. An aerial photo showing the land use out 3 km from the meteorological tower location is included as Figure A-5, Appendix A.

Table 7-1
Land Use Surface Characteristics

Season	Albedo	Bowen	Roughness
Winter	0.60	1.50	0.01
Spring	0.14	0.30	0.03
Summer	0.20	0.50	0.20
Autumn	0.18	0.70	0.05

To support the choice in meteorological data, a wind rose plot is included as Figure A-6, Appendix A. This wind rose illustrates that the meteorological data is consistent with the meteorology in the region. The average annual wind speed is about 8.6 knots (or 9.9 mph). According to the Western Regional Climate Center, the prevailing wind direction in the east-central valleys of Idaho are influenced by the diurnal valley wind drainage flow, which is typically from the Southeast in the fall and winter months, and from the Northwest in the spring and summer months. These patterns are consistent with those shown in the wind rose chart.

8.0 LAND-USE CLASSIFICATION

Following the land-use classification procedure provided in Appendix E of the IDEQ Modeling Guidelines, the area within 3km of the site has been classified as rural. The majority of the 3km radius around the Agrium facility is largely agricultural or undeveloped, with the ground cover being mostly wild grasses, weeds and shrubs, and sparsely located trees. According to the Auer classifications, A2, A3, and A4 best describe the land use near the Agrium facility. Therefore, this modeling assessment for the Agrium facility utilizes the rural dispersion coefficient.

9.0 BACKGROUND CONCENTRATIONS

Since the analysis indicates that the SCLs are not exceeded for PM10 and PM2.5, no further assessment is required. As a result, background data for these pollutants is not needed. For fluoride, no background data was included. Regardless, because the resulting concentration from the facility sources of fluoride is less than 6% of the AAC, it is not expected that the background concentration of fluoride would be significant enough to cause a cumulative exceedance of the AAC.

10.0 EVALUATION OF COMPLIANCE WITH STANDARDS

10.1 Criteria Pollutant Results

The modeled PTE for criteria pollutants from the planned new source were compared directly to the SCLs. Based on the modeling results, the affected criteria compounds from the planned new source are all less than the applicable SCL. As a result, no additional analysis was required for assessing the NAAQS. Table 10-1 provides a summary of the results.

10.2 TAP Pollutant Results

The modeled PTE for fluoride from all sources within the facility were compared with the AAC. The results indicate that the max impacts are less than 6% of the AAC. Table 10-1 provides a summary of the results. The location of the maximum impacts are provided in Figure A-7, Appendix A.

Table 10-1
AQIA Results Compared with Applicable Standards

Pollutant	Averaging Period	Modeled Impacts^{1,2} ($\mu\text{g}/\text{m}^3$)	SCL or AAC ($\mu\text{g}/\text{m}^3$)	Requires Additional Analysis (Yes/No)
Fluoride	24-hour	4.19563	125	No
Particulate Matter (PM-10)	24-hour Annual ³	1.32720 0.20912	5.0 NA	No No
Particulate Matter (PM-2.5)	24-hour Annual	0.39658 0.06794	5.0 1.0	No No

Notes:

¹ Modeled impact of fluoride is based on facility wide emissions since this is a TAP in excess of the screening emission level and no SCL equivalent is published for which the new source only impacts can be compared.

² Modeled impacts of PM10 and PM2.5 are based on the new source only for comparison to the SCL. Because impacts did not exceed the SCL, no further analysis is required.

³ The Annual PM-10 standard was revoked by the USEPA on November 28, 2006.

11.0 MODELING FILES

The modeling files are provided on CD in Appendix D, along with a readme file explaining the files.

12.0 LIMITATIONS

This report was prepared in general accordance with the accepted standard of care that existed in Idaho at the time the report was written. The results contained in this report are based upon the information acquired at the time of the investigation. It is possible that not all conditions were identified during this project. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time.

It should be recognized that identifying and assessing possible environmental, health and safety issues and regulatory requirements is difficult. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the facility. Kleinfelder should be notified for additional consultation if the client wishes to reduce the uncertainties beyond the level associated with this report. It should be recognized that the scope of work described here is not intended to be inclusive, to identify all potential concerns, or to eliminate the possibility of problems. No warranty or guarantee, expressed or implied, is made.

This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance. Any party other than the client who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

13.0 REFERENCES

Auer, A.H., Jr., 1978. *Correlation of Land Use and Cover with Meteorological Anomalies*. Journal of Applied Meteorology, 17(5): 636-643.

EPA, 2000. *Meteorological Monitoring Guidance for Regulatory Modeling Applications*. EPA Publication No. EPA-454/R-99-005. U.S. Environmental Protection Agency, Research Triangle Park, NC.

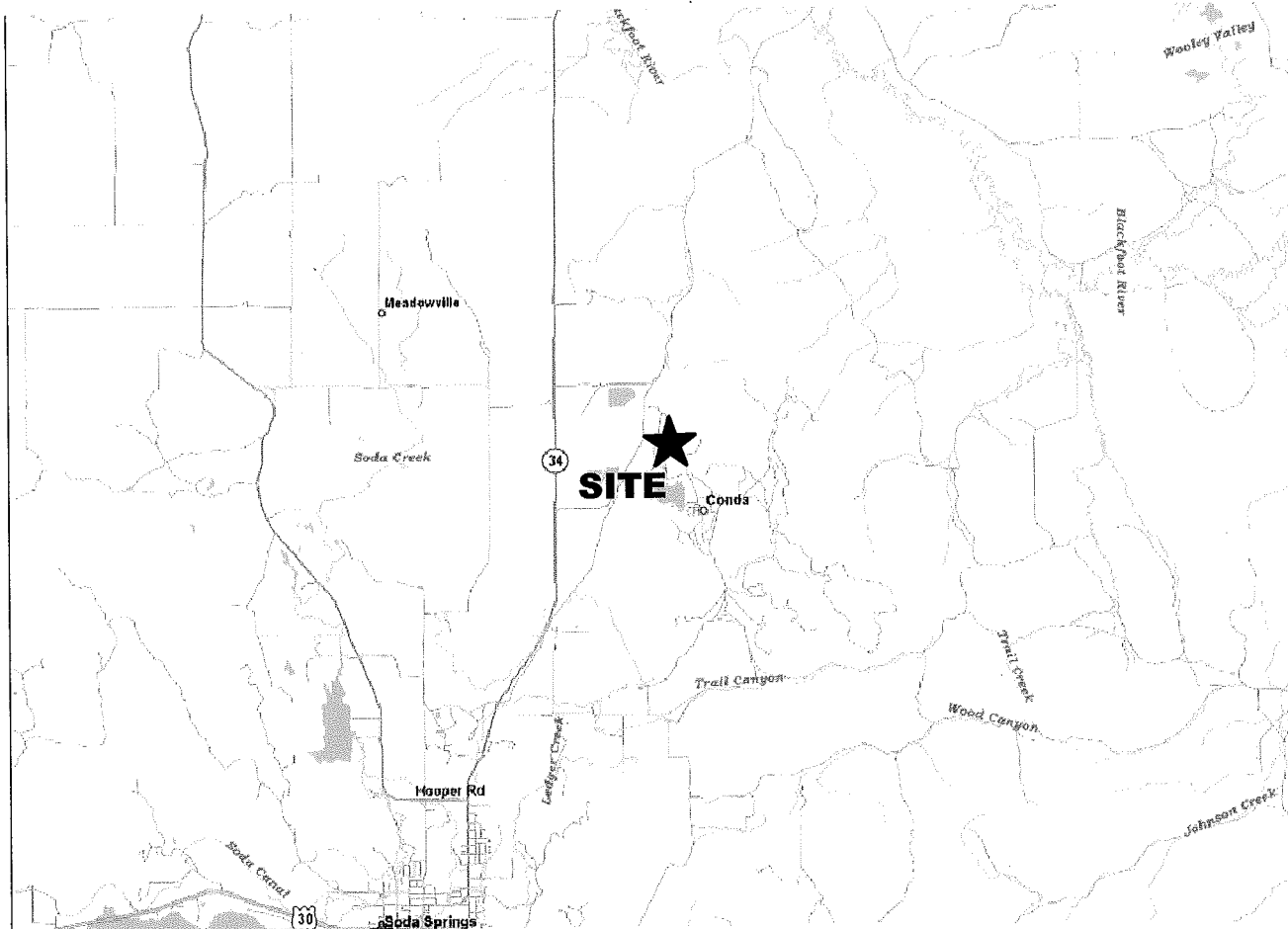
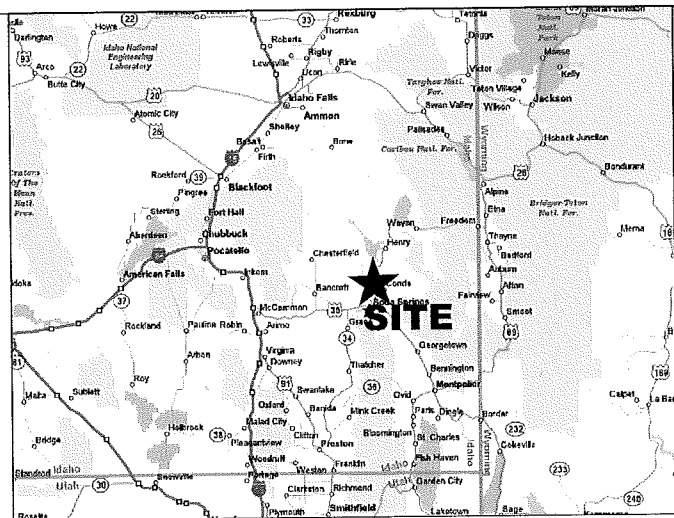
EPA, 2001. *Guideline on Air Quality Models*. 40 CFR Part 51, Appendix W, July 1, 2001.

EPA's SCRAM Web site: <http://www.epa.gov/scram001/index.htm>.

IDAPA 58.01.01, et seq. *Rules for the Control of Air Pollution in Idaho*.

Appendix A –

Figures



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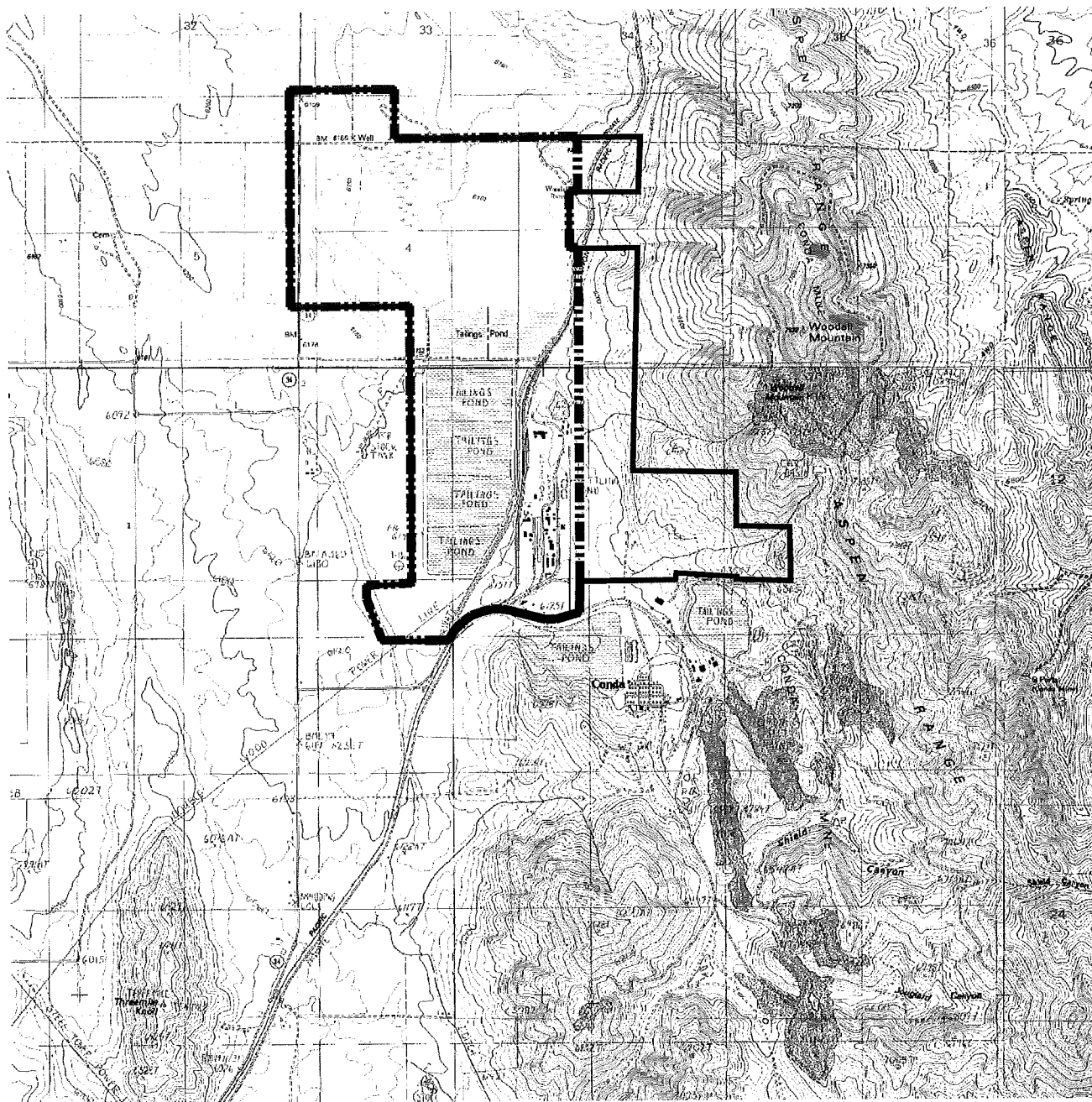


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Project Location Map
 NU-West Industries, Inc.
 Agrium Conda Phosphate Operations
 Soda Springs, Idaho

Figure
A-1

Checked By: K. Allen	Drafted By: S. Hyskell
Project Number: 86045-002	Date: August 2007



- - - - - Control Boundary
 ————— Property Boundary

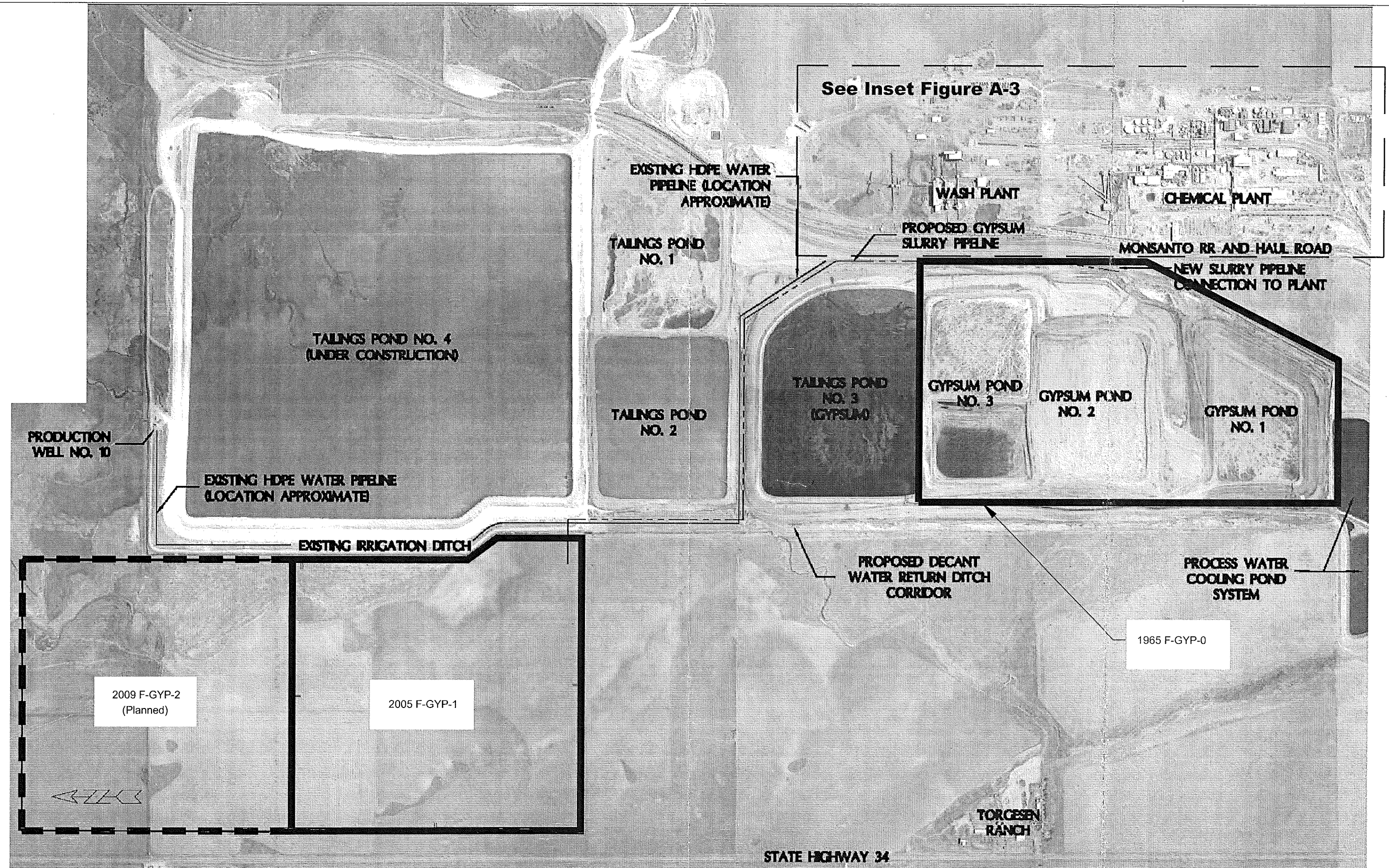
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Vicinity Map
 NU-West Industries, Inc.
 Agrium Conda Phosphate Operations
 Soda Springs, Idaho

Figure

A-2

Checked By: K. Allen	Drafted By: S. Hyskell
Project Number: 86045-002	Date: August 2007



Reference: Base Map Provided by Engineers, Inc., May 2007



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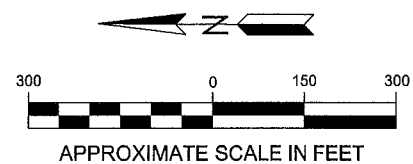
Checked By: K. Allen	Drafted By: S. Hyskell
Project Number: 86045-002	Date: August 2007

Overall Facility Layout
 NU-West Industries, Inc.
 Agrium Conda Phosphate Operations
 Soda Springs, Idaho

Figure
 A-3



Reference: Base Map Provided by 3DI West, April 2006

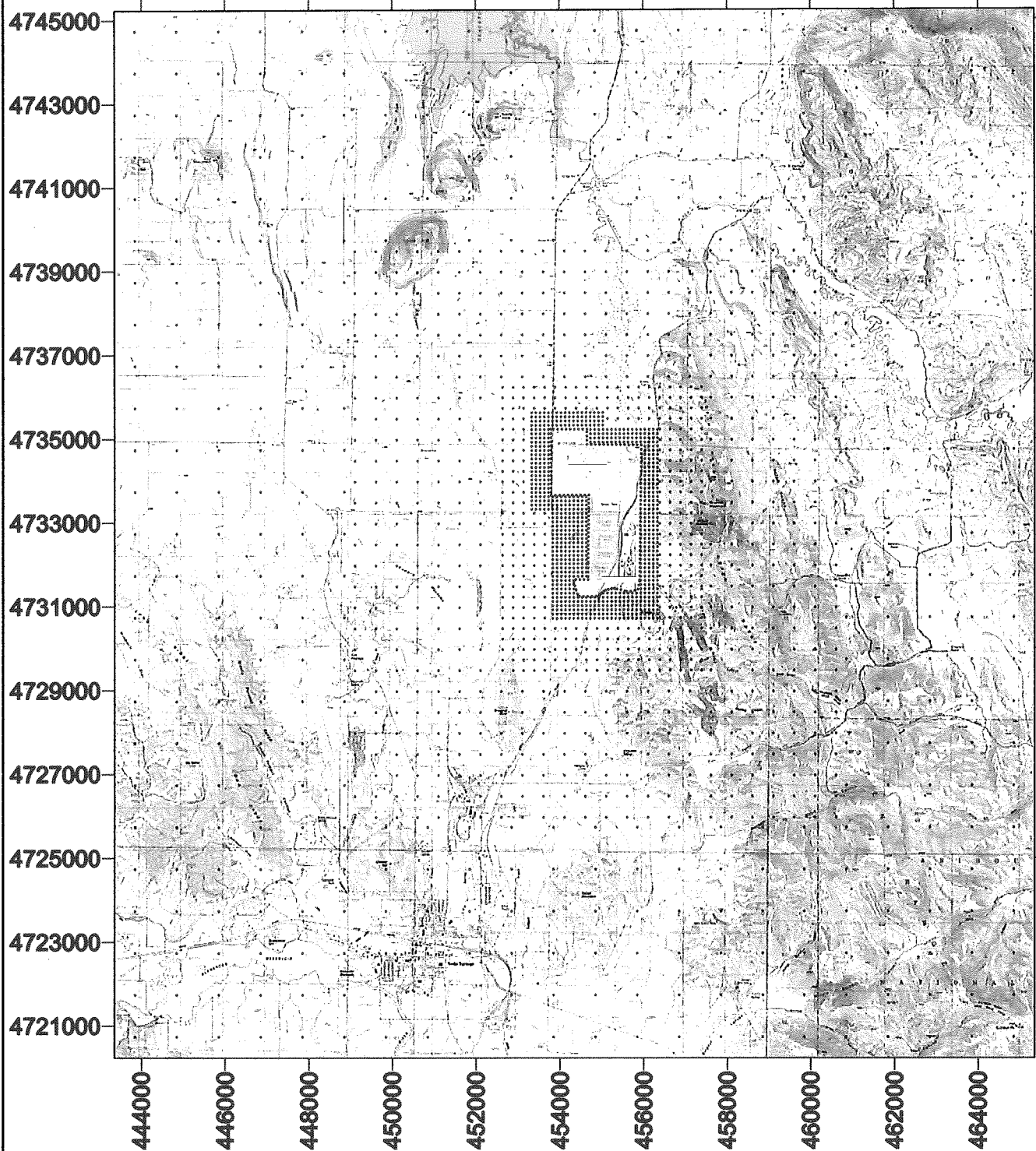


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Checked By: K. Allen	Drafted By: S. Hyskell
Project Number: 86045-002	Date: August 2007

Manufacturing Facility Layout
NU-West Industries, Inc.
Agrium Conda Phosphate Operations
Soda Springs, Idaho

Inset
Figure
A-3

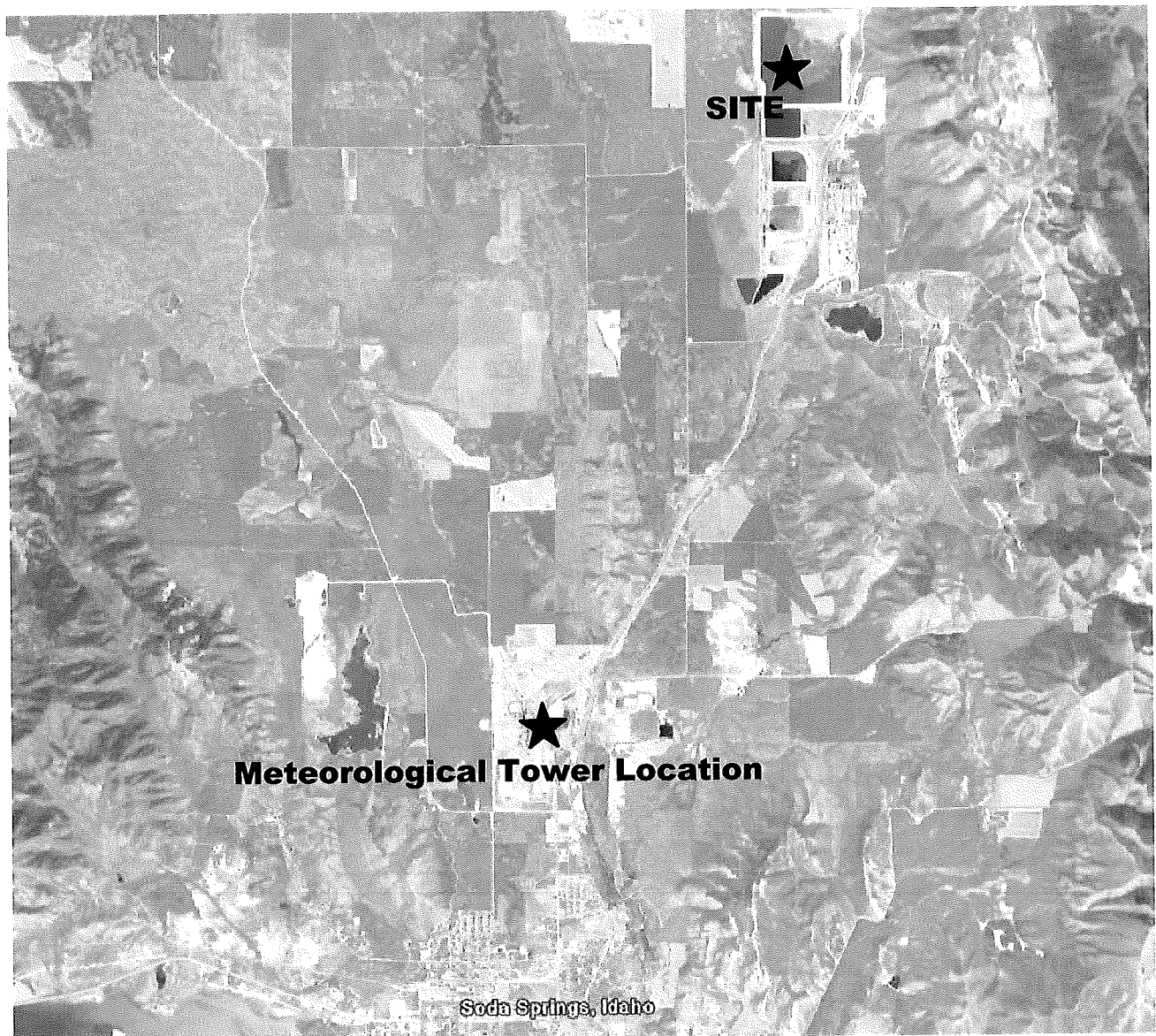


KLEINFELDER
An employee owned company

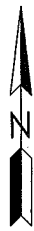
Checked By: K. Allen	Drafted By: R. Stump
Project Number: 81886-300	Date: July 2007

AQIA Modeling Receptor Grids
NU-West Industries, Inc.
Agrium Conda Phosphate Operations
Soda Springs, Idaho

Figure
A-4



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KLEINFELDER

Meteorological Tower Location Map

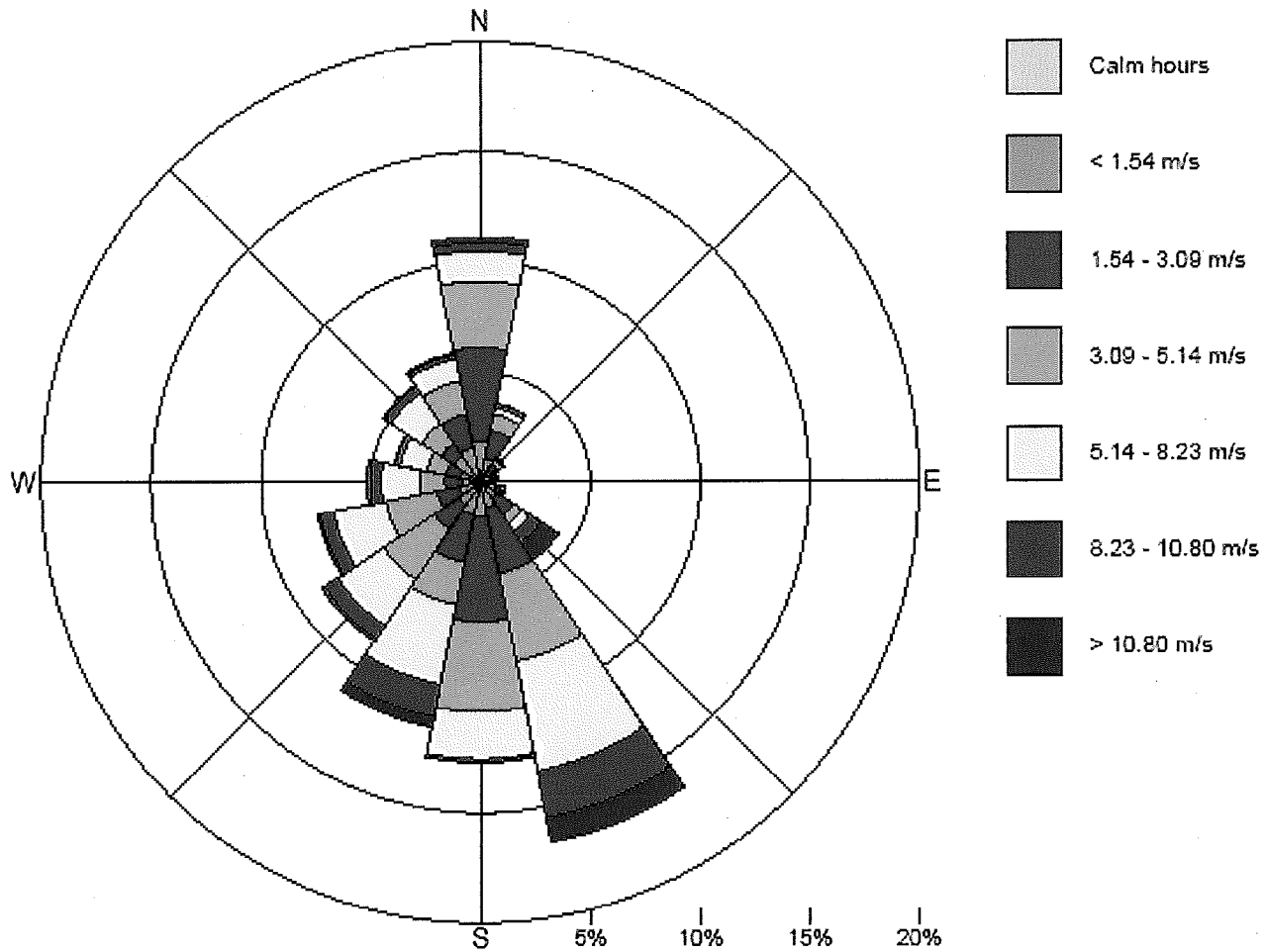
NU-West Industries, Inc.
Agrium Conda Phosphate Operations
Soda Springs, Idaho

Figure

A-5

Checked By: K. Allen	Drafted By: S. Hyskell
Project Number: 81886-202	Date: May, 2007

1/1/2003 Hr 1 to 12/31/2003 Hr 24



Met Data Source: "On-Site" surface data from Monsanto Met Station
 NWS surface data from Pocatello Idaho Airport
 Upper Air data from Salt Lake City Airport

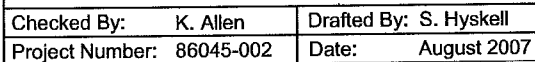
KLEINFELDER

Wind Rose Plot
 NU-West Industries, Inc.
 Agrium Conda Phosphate Operations
 Soda Springs, Idaho

Figure

A-6

Checked By: K. Allen	Drafted By: S. Hyskell
Project Number: 81886-202	Date: May, 2007



Appendix B –
Dispersion Modeling Checklist

Table B-1

Modeling Protocol Checklist for New Minor Sources or Minor Modifications

Checklist Item	Completed (yes / no)	Protocol Section
Introduction and Purpose	Yes	2
• General overview, facility description, terrain description	Yes	2.1
• Project Overview	Yes	2.2
• Goals of the air quality impact analysis (i.e., demonstrate compliance for a permit to construct or a Tier II operating permit)	Yes	2.3
• Applicable regulations and requirements	Yes	2.4
• Pollutants of concern	Yes	2.5
Emission and Source Data	Yes	3
• Facility processes and emission controls effected by the permitting action	Yes	3.1
• Include a list of emission points that will be included in the application. Present a table showing current actual and future allowable emission rates (in maximum pounds per hour tons per year) and the requested emission increase (future allowable minus current actual)	Yes	3.2
• Good engineering practice (GEP) stack-height analysis	Yes	3.3
• Facility layout: location of sources, buildings, and fence lines	Yes	3.4
• Source parameters (emissions rates, UTM coordinates, stack height, stack elevation, stack diameter, stack-gas exit velocity, and stack-gas exit temperature) for each new or modified emission point	Yes	3.5
• Methodology for including area and volume sources in the modeling analysis	Yes	3.6
• Methodology for including/excluding sources from the modeling analysis	Yes	3.7
Air Quality Modeling Methodology	Yes	4
• Model selection and justification	Yes	4.1
• Model setup and application <ul style="list-style-type: none"> - Model options (i.e., regulatory default) - <i>Averaging periods</i> - <i>Land-use analysis</i> 	Yes	4.2

Table B-1 Cont'd
Modeling Protocol Checklist for New Minor Sources or Minor Modifications

Checklist Item	Completed (yes / no)	Protocol Section
<ul style="list-style-type: none"> - <i>Building Downwash</i> - <i>Treatment of chemical transformation (e.g., NO to NO2)</i> - <i>Other parameters</i> 		
<ul style="list-style-type: none"> • Elevation data <ul style="list-style-type: none"> - <i>Methodology for accounting for complex terrain</i> 	Yes	4.6
<ul style="list-style-type: none"> • Receptor network <ul style="list-style-type: none"> - <i>Description of receptor grids – include methodology for ensuring the maximum concentration will be estimated</i> - <i>Discussion/justification of ambient air</i> - <i>Determination of receptor elevations</i> 	Yes	4.7
<ul style="list-style-type: none"> • Meteorological data <ul style="list-style-type: none"> - <i>Selection of meteorological databases – justification of appropriateness of meteorological data to area of interest</i> - <i>Meteorological data processing</i> - <i>Meteorological data analysis (e.g., wind rose)</i> 	Yes	4.8
<ul style="list-style-type: none"> • Background concentrations 	Yes	4.9
Applicable Regulatory Limits	Yes	5
<ul style="list-style-type: none"> • Methodology for evaluation of compliance with standards (i.e., determination of design concentration) 	Yes	5.1
<ul style="list-style-type: none"> • Preliminary analysis <ul style="list-style-type: none"> - <i>Comparison to Idaho SCLs</i> - <i>TAP analysis</i> 	Yes	5.1
<ul style="list-style-type: none"> • Full impact analysis <ul style="list-style-type: none"> - <i>NAAQS analysis</i> 	Yes	5.1
<ul style="list-style-type: none"> • Presentation of results – state how the results of the modeling analysis will be displayed (i.e., list what information will be included) 	Yes	5.1
References	Yes	6

Idaho DEQ Air Dispersion Modeling Checklist

As a requirement of the air permitting process, an air dispersion modeling analysis (screening and/or refined) must be conducted. Air dispersion models are used to predict the potential impact a source may have on the air shed in which it is located. This checklist will aid in collecting all of the necessary information to perform a complete modeling analysis. The EPA's *Guideline on Air Quality Models* (EPA 2001) and this guideline should be used as a reference to ensure that the modeling techniques used will meet federal and state requirements. Please include sufficient computer disk copies of the DOS versions of input and output files so DEQ can reproduce model runs. DEQ must be able to rerun the input files on the DOS versions of the models. Copies of the meteorological data files used and all building information must also be included. A scaled plot plan showing the location of all structures and emission points needs to be submitted as part of the permitting application. It is strongly recommended that the facility contact the DEQ modeling coordinator prior to performing an air quality assessment to negotiate a modeling protocol. Units must be noted where appropriate, both English and metric units are acceptable.

It is important that the **most recent model versions** be utilized in any analysis.

1. Name of Applicant/Company: Agrium Conda Phosphate Operations
3010 Conda Road
Soda Springs, Idaho 83276

Facility Description: See Report Section 4.1

Dispersion Model(s) Used: AERMOD - See Report Section 3.0

2. Source Classification:

Number of Point Sources See Report - Appendix C.
(Section 3)

Number of Area Sources See Report - Appendix C.
(Section 4)

Number of Volume Sources See Report - Appendix C.
(Section 5)

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by $AREA = \pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: PM_{2.5} refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Stack Height _____ Stack Diameter _____ Stack Temperature _____

Stack Exit Velocity _____ and/or Actual Stack Flow Rate _____

Stack Orientation (Horizontal or Vertical) _____ Rain Cap Present (Y or N) _____

Source See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Stack Height _____ Stack Diameter _____ Stack Temperature _____

Stack Exit Velocity _____ and/or Actual Stack Flow Rate _____

Stack Orientation (Horizontal or Vertical) _____ Rain Cap Present (Y or N) _____

Source See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Stack Height _____ Stack Diameter _____ Stack Temperature _____

Stack Exit Velocity _____ and/or Actual Stack Flow Rate _____

Stack Orientation (Horizontal or Vertical) _____ Rain Cap Present (Y or N) _____

4. Area Source Parameters (please include for each area source modeled). List the **maximum** emissions rate(s) for each pollutant. Units must be noted where appropriate, both English and metric units are acceptable.

Source: See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Source Height _____ Easterly Dimension _____ Northerly Dimension _____

Initial Vertical Dimension _____ Angle from North _____

Source: See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Source Height _____ Easterly Dimension _____ Northerly Dimension _____

Initial Vertical Dimension _____ Angle from North _____

Source: See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Source Height _____ Easterly Dimension _____ Northerly Dimension _____

Initial Vertical Dimension _____ Angle from North _____

Source: See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Source Height _____ Easterly Dimension _____ Northerly Dimension _____

Initial Vertical Dimension _____ Angle from North _____

5. Volume Source Parameters (please include for each volume source modeled). List the **maximum** emissions rate(s) for each pollutant. Units must be noted where appropriate, both English and metric units are acceptable.

Source See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Source Height _____ Initial Horizontal Dimension _____

Initial Vertical Dimension _____

Source See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Source Height _____ Initial Horizontal Dimension _____

Initial Vertical Dimension _____

Source See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Source Height _____ Initial Horizontal Dimension _____

Initial Vertical Dimension _____

Source See Report - Appendix C.

PM₁₀ _____ PM_{2.5} _____ NO_x _____ SO₂ _____ CO _____ VOC _____

Toxic(s) (Please List): _____

Source Height _____ Initial Horizontal Dimension _____

Initial Vertical Dimension _____

6. Structure Parameters: (Applies to any and all structures within the property boundary(ies) as well as nearby structures that may influence the dispersion of pollutants emitted by the source(s)). Units must be noted where appropriate, both English and metric units are acceptable.

Building See Report - Appendix A and BPIP file.

Building Tier No. 1 Height: _____ Building Tier No. 1 Length: _____ Building Tier No. 1 Width: _____

Building Tier No. 2 Height: _____ Building Tier No. 2 Length: _____ Building Tier No. 2 Width: _____

Building Tier No. 3 Height: _____ Building Tier No. 3 Length: _____ Building Tier No. 3 Width: _____

Building See Report - Appendix A and BPIP file.

Building Tier No. 1 Height: _____ Building Tier No. 1 Length: _____ Building Tier No. 1 Width: _____

Building Tier No. 2 Height: _____ Building Tier No. 2 Length: _____ Building Tier No. 2 Width: _____

Building Tier No. 3 Height: _____ Building Tier No. 3 Length: _____ Building Tier No. 3 Width: _____

Building See Report - Appendix A and BPIP file.

Building Tier No. 1 Height: _____ Building Tier No. 1 Length: _____ Building Tier No. 1 Width: _____

Building Tier No. 2 Height: _____ Building Tier No. 2 Length: _____ Building Tier No. 2 Width: _____

Building Tier No. 3 Height: _____ Building Tier No. 3 Length: _____ Building Tier No. 3 Width: _____

Building See Report - Appendix A and BPIP file.

Building Tier No. 1 Height: _____ Building Tier No. 1 Length: _____ Building Tier No. 1 Width: _____

Building Tier No. 2 Height: _____ Building Tier No. 2 Length: _____ Building Tier No. 2 Width: _____

Building Tier No. 3 Height: _____ Building Tier No. 3 Length: _____ Building Tier No. 3 Width: _____

Tank N/A - See Appendix C.

Tank Height _____

Tank Diameter _____

Tank _____

Tank Height _____

Tank Diameter _____

Tank _____

Tank Height _____

Tank Diameter _____

Tank _____

Tank Height _____

Tank Diameter _____

7. Scaled Plot Plan: (Make sure that all of the buildings and tanks shown on the scaled plot plan are also listed in section 6.)

See Report - Appendix A.

Emission Release Locations: _____ Buildings: _____ Tanks: _____
(On site and neighboring) (On site and neighboring)

Property Boundary(ies): _____ Potential Co-contributor(s): _____

Sensitive Receptors: _____

Note: A sensitive receptor is defined in IDAPA 58.01.01.007.10 as, "any residence, building, or location occupied or frequented by persons who, due to age, infirmity, or health-based criteria, may be more susceptible to the deleterious effects of a toxic air pollutant than the general population including, but not limited to, elementary and secondary schools, day care centers, playgrounds and parks, hospitals, clinics, and nursing homes".

8. Topographic Map Showing: See Report - Appendix A.

Source Location(s) _____ Buildings _____ Tanks _____
(On site and neighboring) (On site and neighboring)

Property Boundary(ies) _____ Model Receptors _____

Maximum Impact Locations _____

9. Meteorology Used (upper air and surface data): See Report Section 7.0

Site-Specific: _____

A quality control and quality assurance analysis, consistent with EPA guidelines, should be included for any on-site data used other than that supplied by the NWS. Contact DEQ regarding the adequacy of this data before use.

NWS Data Representative of the Site _____

10. Land Use Classification: See Report Section 8.0

Urban _____ Rural _____ (DEQ can be contacted for further guidance on source classification)

Justification:

Since this is a voluntary modeling assessment, modeling approach has been included within this report. The IDEQ Air Quality Modeling Guideline, dated December 2002, was utilized for this AQIA. Also, this checklist was incorporated into the modeling assessment.

Completeness Determination Questions:

- Was a modeling protocol approved by DEQ prior to permit application? Negotiating a modeling protocol with DEQ assures the general modeling approach will be accepted.
- Is a justification given explaining why a particular dispersion model was used?
- Did you document and justify input parameters and model settings? (Please include a written justification.)
- Were grid receptors placed 100 to 500 meters apart for the initial modeling analysis in order to find the area of maximum impact?
- Were grid receptors placed 25 to 50 meters apart in the area of maximum impact?
- What ambient air quality standards apply (e.g., NAAQS, significance standards, acceptable ambient concentration for carcinogens and non-carcinogens (AACC, AAC, respectively), PSD increment standards)?
- Were DEQ-approved background concentrations included in the modeling analysis (attainment and unclassified areas only)?

Considerations for major pollution sources and sources subject to PSD regulations:

- Was DEQ contacted regarding the need for (and quality control of) pre-construction monitoring data?
- Was a visibility analysis performed?
- Was the area of significant impact documented?
- Were impacts included (on disk) at all integral UTM coordinates within the significant impact area?
- If a major facility (as defined in IDAPA 58.01.01.006.55), was cumulative increment consumption analyzed?

Signature of modeler (please print and sign name)

Kris Allen

Kris Allen

Telephone Number

719-632-3593

Name of DEQ Modeling Contact

Kevin Schilling

Telephone Number

(208) 373-0502

Appendix C -
Tables of Supporting Data

Table C-1
Particulate Matter Area Source Emission Rates

Source ID	Source Description	Area (m ²)	PM10 Emission Rate (lb/day)	PM10 Modeled 24-hr Emission Rate (g/s/m ²)	PM10 Annual Emission Rate (tpy)	PM10 Modeled Annual Emission Rate (g/s/m ²)	PM2.5 Emission Rate (lb/day)	PM2.5 Modeled 24-hr Emission Rate (g/s/m ²)	PM2.5 Annual Emission Rate (tpy)	PM2.5 Modeled Annual Emission Rate (g/s/m ²)
F-Gyp-2	2009 Gyp Stack	505,857	10.32	1.07E-07	1.88	1.07E-07	1.56	1.62E-08	0.29	1.62E-08

Table C-2
Particulate Matter Area Source Parameters

Source ID	Source Description	UTM E	UTM N	Release Height	Initial Vertical Dimension	Length	Width	Area ¹	Angle
				(m)	(m)	(m)	(m)	(m ²)	
F-Gyp-2	2009 Gyp Stack	453857.1	4734449.2	40	0	727.4	739.9	505,857	0

Notes:

¹ Due to the large scale size of the gypsum stack, the length and width of the source represented in the model are best fit approximations used to represent the area of the source.

Table C-3
Fluoride Point Source Emissions

Source ID	Source Description	Fluoride Emission Rate (lb/day)	Fluoride Modeled 24-hr Emission Rate (g/s)
S-Pa-1	Phosphoric Acid Process	20.71	1.09E-01
S-Pb-1	Superphosphoric Acid Process	8.22	4.32E-02
S-Fa-1	Granulation Plant & Dryer	33.56	1.76E-01
S-Fc-1	Dry Product Loadout	2.74	1.44E-02

Table C-4
Fluoride Area Source Emissions

Source ID	Source Description	Fluoride Emission Rate (lb/day)	Fluoride Modeled 24-hr Emission Rate (g/s/m²)
F-Gyp-0	1965 Gyp Stack	10.00	1.04E-07
F-Gyp-1	2005 Gyp Stack	10.00	1.04E-07
F-Gyp-2	2009 Gyp Stack	10.00	1.04E-07

Table C-5
Fluoride Volume Source Emissions

Source ID	Source Description	Fluoride Emission Rate (lb/day)	Fluoride Modeled 24-hr Emission Rate (g/s)
S-Fb-1	Dry Product Transfer/Sizing	2.74	1.44E-02

Table C-6
Fluoride Assessment Point Source Parameters

Source ID	Source Description	UTM E	UTM N	Stack Height (ft.)	Stack Temp (°F)	Stack Flow Rate (acfm)	Stack Dia. (ft.)
S-Pa-1	Phosphoric Acid Process	455653.0	4732125.9	114	85	89,500	6.75
S-Pb-1	Superphosphoric Acid Process	455691.7	4732064.3	56.5	70	12,400	3.0
S-Fa-1	Granulation Plant & Dryer	455687.0	4731882.9	120	146	87,000	9.83
S-Fc-1	Dry Product Loadout	455535.6	4731896.2	10	70	1	1

Table C-7
Fluoride Assessment Area Source Parameters

Source ID	Source Description	UTM E	UTM N	Rel. Height (m)	Initial Vertical Dim. (m)	Length (m)	Width (m)	Area ¹ (m ²)	Angle
F-Gyp-0	1965 Gyp Stack	454748.0	4731619.6	40	0	1126	638	505,857	0
F-Gyp-1	2005 Gyp Stack	454585.2	4734448.4	40	0	286.8	361.7	505,857	-180
F-Gyp-2	2009 Gyp Stack	453857.1	4734449.2	40	0	286.8	361.7	505,857	0

Notes:

¹ Due to the large scale size of the gypsum stacks, the areas applied in the model are approximations based on aerial figures. The existing gyp stacks (F-Gyp-0 and F-Gyp-2) were modeled as polygon sources using the BREEZE program. Therefore, the length, width and area provided in this table are approximations.

Table C-8
Fluoride Assessment Volume Source Parameters

Device ID	Source Description	UTM E	UTM N	Release Ht. (ft.)	Initial Lateral Dimension Sigma y (ft.)	Initial Vertical Dimension Sigma z (ft.)	Length of Side (ft.)	Length of Vertical Dimension (ft.)
F-Fb-1	Dry Product Transfer/Sizing	455580.6	4731896.1	90	21.7	41.9	93.5	90

Appendix D –

Modeling File Disks and
Readme File Explaining the Files

Description of AERMOD Modeling Files

Input and Output Files:

The model input files include:

File Name	Description
AG03_24Hr_Fluoride_FIA.DAT	Model input file for facility wide 24-hr impacts of Fluoride emissions.
AG03_24Hr_ANN_PM_PA.DAT	Model input file for 24-hour and Annual PM-10 and PM-2.5 impacts for planned gyp stacks.

The output files have the same name as the input files but with the pollutant identification added to the file name per the following format:

AG03_XXXX_YY_AA_yy.LST

Where:

XXXX = the averaging period

YY = the general pollutant ID

yy = specific pollutant ID generated by BREEZE for multi-pollutant run

AA = Assessment Type (FIA = Full Impact Assessment, PA= Preliminary Assessment)

Meteorological Data File:

Profile File = Agrium03.PFL

Surface File = Agrium03.SFC

Building Profile (BPIP File):

Agrium BPIP.BPI